

SEQUENCE LISTING

<110> KIM, TAE-YOON
BIO CLUE & SOLUTION CO., LT

<120> EC SOD and Cell transducing EC SOD and use thereof

<150> KR10-2003-0076629

<151> 2003-10-31

<160> 33

<170> KopatentIn 1.71

<210> 1

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 1

atgttgcct tctgttc

18

<210> 2

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 2

ttaagtgtc ttgcactc

18

<210> 3

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 3
agtctcgaga tggcgcctt cttgttctac ggc 33

<210> 4
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 4
gatcctcgag tggccttgca ctgcctct 28

<210> 5
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 5
atctctagaa tggcggcgt actgtgt 27

<210> 6
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 6
atcgaatcct caggcggcct tgcactcgct ctct 34

<210> 7
<211> 30
<212> DNA
<213> Artificial Sequence

<220>

<223> primer

<400> 7

gatcctcgag tggacgggcg aggactcggc

30

<210> 8

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 8

gatcctcgag tcaggcggcc ttgcactcgc t

31

<210> 9

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 9

gatcctcgag tggacgggcg aggactcggc

30

<210> 10

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 10

aatgctcgag tcactctgag tgctcccgcg c

31

<210> 11

<211> 240

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(240)

<223> Human EC SOD

<400> 11

Met Leu Ala Leu Leu Cys Ser Cys Leu Leu Leu Ala Ala Gly Ala Ser
1 5 10 15
Asp Ala Trp Thr Gly Glu Asp Ser Ala Glu Pro Asn Ser Asp Ser Ala
20 25 30
Glu Trp Ile Arg Asp Met Tyr Ala Lys Val Thr Glu Ile Trp Gln Glu
35 40 45
Val Met Gln Arg Arg Asp Asp Asp Gly Thr Leu His Ala Ala Cys Gln
50 55 60
Val Gln Pro Ser Ala Thr Leu Asp Ala Ala Gln Pro Arg Val Thr Gly
65 70 75 80
Val Val Leu Phe Arg Gln Leu Ala Pro Arg Ala Lys Leu Asp Ala Phe
85 90 95
Phe Ala Leu Glu Gly Phe Pro Thr Glu Pro Asn Ser Ser Ser Arg Ala
100 105 110
Ile His Val His Gln Phe Gly Asp Leu Ser Gln Gly Cys Glu Ser Thr
115 120 125
Gly Pro His Tyr Asn Pro Leu Ala Val Pro His Pro Gln His Pro Gly
130 135 140
Asp Phe Gly Asn Phe Ala Val Arg Asp Gly Ser Leu Trp Arg Tyr Arg
145 150 155 160
Ala Gly Leu Ala Ala Ser Leu Ala Gly Pro His Ser Ile Val Gly Arg
165 170 175
Ala Val Val Val His Ala Gly Glu Asp Asp Leu Gly Arg Gly Gly Asn
180 185 190
Gln Ala Ser Val Glu Asn Ala Gly Arg Arg Leu Ala Cys Cys
195 200 205
Val Val Gly Val Cys Gly Pro Gly Leu Trp Glu Arg Gln Ala Arg Glu
210 215 220
His Ser Glu Arg Lys Lys Arg Arg Arg Glu Ser Glu Cys Lys Ala Ala
225 230 235 240

<210> 12

<211> 231

<212> PRT

<213> Artificial Sequence

<220>

<223> TAT-EC SOD fusion protein

<400> 12

Arg Lys Lys Arg Arg Gln Arg Arg Arg Trp Thr Gly Glu Asp Ser Ala
1 5 10 15
Glu Pro Asn Ser Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala Lys
20 25 30
Val Thr Glu Ile Trp Gln Glu Val Met Gln Arg Arg Asp Asp Asp Gly
35 40 45
Thr Leu His Ala Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp Ala
50 55 60
Ala Gln Pro Arg Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala Pro
65 70 75 80
Arg Ala Lys Leu Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr Glu
85 90 95
Pro Asn Ser Ser Ser Arg Ala Ile His Val His Gln Phe Gly Asp Leu
100 105 110
Ser Gln Gly Cys Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala Val
115 120 125
Pro His Pro Gln His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg Asp
130 135 140
Gly Ser Leu Trp Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala Gly
145 150 155 160
Pro His Ser Ile Val Gly Arg Ala Val Val Val His Ala Gly Glu Asp
165 170 175
Asp Leu Gly Arg Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn Ala
180 185 190
Gly Arg Arg Leu Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly Leu
195 200 205
Trp Glu Arg Gln Ala Arg Glu His Ser Glu Arg Lys Lys Arg Arg Arg
210 215 220
Glu Ser Glu Cys Lys Ala Ala
225 230

<210> 13

<211> 218

<212> PRT

<213> Artificial Sequence

<220>

<223> TAT-delta HD/EC SOD fusion protein

<400> 13

Arg Lys Lys Arg Arg Gln Arg Arg Arg Trp Thr Gly Glu Asp Ser Ala
1 5 10 15
Glu Pro Asn Ser Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala Lys
20 25 30
Val Thr Glu Ile Trp Gln Glu Val Met Gln Arg Arg Asp Asp Asp Gly

35 40 45
 Thr Leu His Ala Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp Ala
 50 55 60
 Ala Gln Pro Arg Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala Pro
 65 70 75 80
 Arg Ala Lys Leu Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr Glu
 85 90 95
 Pro Asn Ser Ser Ser Arg Ala Ile His Val His Gln Phe Gly Asp Leu
 100 105 110
 Ser Gln Gly Cys Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala Val
 115 120 125
 Pro His Pro Gln His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg Asp
 130 135 140
 Gly Ser Leu Trp Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala Gly
 145 150 155 160
 Pro His Ser Ile Val Gly Arg Ala Val Val Val His Ala Gly Glu Asp
 165 170 175
 Asp Leu Gly Arg Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn Ala
 180 185 190
 Gly Arg Arg Leu Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly Leu
 195 200 205
 Trp Glu Arg Gln Ala Arg Glu His Ser Glu
 210 215

<210> 14
 <211> 231
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> R9-EC SOD fusion protein

<400> 14
 Arg Arg Arg Arg Arg Arg Arg Arg Trp Thr Gly Glu Asp Ser Ala
 1 5 10 15
 Glu Pro Asn Ser Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala Lys
 20 25 30
 Val Thr Glu Ile Trp Gln Glu Val Met Gln Arg Arg Asp Asp Asp Gly
 35 40 45
 Thr Leu His Ala Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp Ala
 50 55 60
 Ala Gln Pro Arg Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala Pro
 65 70 75 80
 Arg Ala Lys Leu Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr Glu
 85 90 95
 Pro Asn Ser Ser Ser Arg Ala Ile His Val His Gln Phe Gly Asp Leu
 100 105 110

Ser Gln Gly Cys Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala Val
 115 120 125
 Pro His Pro Gln His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg Asp
 130 135 140
 Gly Ser Leu Trp Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala Gly
 145 150 155 160
 Pro His Ser Ile Val Gly Arg Ala Val Val Val His Ala Gly Glu Asp
 165 170 175
 Asp Leu Gly Arg Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn Ala
 180 185 190
 Gly Arg Arg Leu Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly Leu
 195 200 205
 Trp Glu Arg Gln Ala Arg Glu His Ser Glu Arg Lys Lys Arg Arg Arg
 210 215 220
 Glu Ser Glu Cys Lys Ala Ala
 225 230

<210> 15
 <211> 232
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> K10-EC SOD fusion protein

<400> 15
 Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Trp Thr Gly Glu Asp Ser
 1 5 10 15
 Ala Glu Pro Asn Ser Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala
 20 25 30
 Lys Val Thr Glu Ile Trp Gln Glu Val Met Gln Arg Arg Asp Asp Asp
 35 40 45
 Gly Thr Leu His Ala Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp
 50 55 60
 Ala Ala Gln Pro Arg Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala
 65 70 75 80
 Pro Arg Ala Lys Leu Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr
 85 90 95
 Glu Pro Asn Ser Ser Ser Arg Ala Ile His Val His Gln Phe Gly Asp
 100 105 110
 Leu Ser Gln Gly Cys Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala
 115 120 125
 Val Pro His Pro Gln His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg
 130 135 140
 Asp Gly Ser Leu Trp Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala
 145 150 155 160
 Gly Pro His Ser Ile Val Gly Arg Ala Val Val Val His Ala Gly Glu

165 170 175
 Asp Asp Leu Gly Arg Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn
 180 185 190
 Ala Gly Arg Arg Leu Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly
 195 200 205
 Leu Trp Glu Arg Gln Ala Arg Glu His Ser Glu Arg Lys Lys Arg Arg
 210 215 220
 Arg Glu Ser Glu Cys Lys Ala Ala
 225 230

<210> 16
 <211> 696
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> nucleotide sequence encoding TAT-EC SOD fusion protein

<400> 16
 aggaagaagc ggagacagcg acgaagatgg acgggcgagg actcggcgga gcccaactct 60
 gactcggcgg agtggatccg agacatgtac gccaaaggta cggagatctg gcaggaggtc 120
 atgcagcggc gggacgacga cggcacgctc cacgccgcct gccaggtgca gccgtcggcc 180
 acgtggacg ccgcgcagcc ccgggtgacc ggcgtcgtcc tcttcggca gcttgcgccc 240
 cgcgccaagc tcgacgcctt cttcgccctg gagggcttcc cgaccgagcc gaacagctcc 300
 agccgcgcca tcacgtgca ccagttcggg gacctgagcc agggctcgca gtccaccggg 360
 cccactaca acccgctggc cgtgccgcac ccgcagcacc cgggcgactt cggcaacttc 420
 gcgttcgcg acggcagcct ctggaggtac cgcgccggcc tggccgcctc gctcgcgggc 480
 ccgcactcca tcgtgggccc ggccgtggtc gtccacgctg gcgaggacga cctgggcccgc 540
 ggcggcaacc agggcagcgt ggagaacggg aacgcggggc ggcggctggc ctgctgcgtg 600
 gtgggcgtgt gcgggcccgg gctctgggag cgccaggcgc gggagcactc agagcgcaag 660
 aagcggcggc gcgagagcga gtgcaaggcc gcctga 696

<210> 17
 <211> 657
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> nucleotide sequence encoding TAT-delta HD/EC SOD fusion protein

<400> 17
 aggaagaagc ggagacagcg acgaagatgg acgggcgagg actcggcgga gcccaactct 60
 gactcggcgg agtggatccg agacatgtac gccaaaggta cggagatctg gcaggaggtc 120
 atgcagcggc gggacgacga cggcacgctc cacgccgcct gccaggtgca gccgtcggcc 180
 acgtggacg ccgcgcagcc ccgggtgacc ggcgtcgtcc tcttcggca gcttgcgccc 240

cgcgccaagc tcgacgcctt cttgccctg gagggcttcc cgaccgagcc gaacagctcc	300
agccgcgcca tccacgtgca ccagttcggg gacctgagcc agggctgcga gtccaccggg	360
ccccactaca acccgctggc cgtgccgcac ccgcagcacc cgggcgactt cggcaacttc	420
gcggtccgcg acggcagcct ctggaggtag cgcgccggcc tggccgcctc gctcgcgggc	480
ccgcactcca tcgtgggccg ggccgtggtc gtccacgtg gcgaggacga cctgggccgc	540
ggcggcaacc aggccagcgt ggagaacggg aacgcgggcc ggcggctggc ctgctgcgtg	600
gtgggcgtgt gcgggcccgg gctctgggag cgccaggcgc gggagcactc agagtga	657

<210> 18
 <211> 696
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> nucleotide sequence encoding R9-EC SOD fusion protein

<400> 18	
cgcgggcggc ggcggcggcg gcggcggtgg acggcgagg actcggcgga gccaactct	60
gactcgcgcg agtgatccg agacatgtac gccaaggtca cgagatctg gcaggaggtc	120
atgcagcggc gggacgacga cggcacgtc caccgcct gccaggtgca gccgtcggcc	180
acgtggacg ccgcgcagcc ccgggtgacc ggcgtcgtc tctccggca gcttgcgcc	240
cgcgccaagc tcgacgcctt cttgccctg gagggcttcc cgaccgagcc gaacagctcc	300
agccgcgcca tccacgtgca ccagttcggg gacctgagcc agggctgcga gtccaccggg	360
ccccactaca acccgctggc cgtgccgcac ccgcagcacc cgggcgactt cggcaacttc	420
gcggtccgcg acggcagcct ctggaggtag cgcgccggcc tggccgcctc gctcgcgggc	480
ccgcactcca tcgtgggccg ggccgtggtc gtccacgtg gcgaggacga cctgggccgc	540
ggcggcaacc aggccagcgt ggagaacggg aacgcgggcc ggcggctggc ctgctgcgtg	600
gtgggcgtgt gcgggcccgg gctctgggag cgccaggcgc gggagcactc agacgcaag	660
aagcggcggc gcgagagcga gtgcaaggcc gcctga	696

<210> 19
 <211> 699
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> nucleotide sequence encoding R9-EC SOD fusion protein

<400> 19	
aagaagaaga agaagaaga gaagaagaag tggacgggcg aggactcggc ggagcccaac	60
tctgactcgg cggagtggat ccgagacatg tacgccaagg tcacggagat ctggcaggag	120
gtcatgcagc ggcgggacga cgacggcacg ctccacgccg cctgccaggt gcagccgtcg	180
gccacgttg acgccgcgca gccccgggtg accggcgtcg tctcttccg gcagcttgcg	240
ccccgcgcca agctcgacgc cttcttccg ctggagggt tcccgaccga gccgaacagc	300

tccagccgcg ccatccacgt gcaccagttc ggggacctga gccagggctg cgagtcacc	360
gggccccact acaacccgct ggccgtgccg caccgcagc acccgggcga ctctggcaac	420
ttcgggtcc gcgacggcag cctctggagg taccgcgccg gcctggccgc ctgctcgcg	480
ggccccgact ccacgtggg ccggggccgtg gtcgtccacg ctggcgagga cgacctgggc	540
cgcggcggca accaggccag cgtggagaac gggaacgcgg gccggcggct ggcctgctgc	600
gtggtgggcg tgtgcgggcc cgggctctgg gagcgccagg cgcgggagca ctcagagcg	660
aagaagcggc ggcgcgagag cgagtgaag gccgcctga	699

<210> 20
 <211> 68
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> primer

<400> 20	
tatgaaagaa acctgggtgg aaacctggtg gaccgaatgg tctcagccga aaaaaaacg	60
taaagtgc	68

<210> 21
 <211> 70
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> primer

<400> 21	
tcgabcactt tacgttttt ttccggctga gaccattcgg tccaccaggt ttcccaccag	60
gtttctttcc	70

<210> 22
 <211> 243
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> PEP1-EC SOD

<400> 22	
Lys Glu Thr Trp Trp Glu Thr Trp Thr Glu Trp Ser Gln Pro Lys	
122 126 131 136	

Lys Lys Arg Lys Val Trp Thr Gly Glu Asp Ser Ala Glu Pro Asn Ser
 141 146 151
 Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala Lys Val Thr Glu Ile
 156 161 166
 Trp Gln Glu Val Met Gln Arg Arg Asp Asp Asp Gly Thr Leu His Ala
 171 176 181
 Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp Ala Ala Gln Pro Arg
 186 191 196 201
 Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala Pro Arg Ala Lys Leu
 206 211 216
 Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr Glu Pro Asn Ser Ser
 221 226 231
 Ser Arg Ala Ile His Val His Gln Phe Gly Asp Leu Ser Gln Gly Cys
 236 241 246
 Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala Val Pro His Pro Gln
 251 256 261
 His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg Asp Gly Ser Leu Trp
 266 271 276 281
 Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala Gly Pro His Ser Ile
 286 291 296
 Val Gly Arg Ala Val Val Val His Ala Gly Glu Asp Asp Leu Gly Arg
 301 - 306 311
 Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn Ala Gly Arg Arg Leu
 316 321 326
 Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly Leu Trp Glu Arg Gln
 331 336 341
 Ala Arg Glu His Ser Glu Arg Lys Lys Arg Arg Arg Glu Ser Glu Cys
 346 351 356 361
 Lys Ala Ala

<210> 23
 <211> 230
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> PEP1-deltaHD/EC SOD

<400> 23
 Lys Glu Thr Trp Trp Glu Thr Trp Trp Thr Glu Trp Ser Gln Pro Lys
 123 127 132 137
 Lys Lys Arg Lys Val Trp Thr Gly Glu Asp Ser Ala Glu Pro Asn Ser
 142 147 152
 Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala Lys Val Thr Glu Ile
 157 162 167
 Trp Gln Glu Val Met Gln Arg Arg Asp Asp Asp Gly Thr Leu His Ala

172 177 182
 Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp Ala Ala Gln Pro Arg
 187 192 197 202
 Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala Pro Arg Ala Lys Leu
 207 212 217
 Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr Glu Pro Asn Ser Ser
 222 227 232
 Ser Arg Ala Ile His Val His Gln Phe Gly Asp Leu Ser Gln Gly Cys
 237 242 247

Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala Val Pro His Pro Gln
 252 257 262
 His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg Asp Gly Ser Leu Trp
 267 272 277 282
 Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala Gly Pro His Ser Ile
 287 292 297
 Val Gly Arg Ala Val Val Val His Ala Gly Glu Asp Asp Leu Gly Arg
 302 307 312
 Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn Ala Gly Arg Arg Leu
 317 322 327
 Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly Leu Trp Glu Arg Gln
 332 337 342
 Ala Arg Glu His Ser Glu
 347 352

<210> 24
 <211> 737
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> nucleotide sequence encoding PEP1-EC SOD fusion protein

<400> 24
 tatgaaagaa acctggtggg aaacctggtg gaccgaatgg tctcagccga aaaaaaacg 60
 taaactgctg gacgggcgag gactcggcgg agcccaactc tgactcggcg gactggatcc 120
 gagacatgta cgccaagtc acggagatct ggcaggaggt catgcagcgg cgggacgacg 180
 acggcacgct ccacgccgcc tgccaggtgc agccgtcggc cagcctggac gccgcgcagc 240
 cccgggtgac cggcgtcgtc ctcttcgggc agcttgccgc ccgcgccaaag ctgcagcct 300
 tcttcgcctt ggagggttc cgcaccgagc cgaacagtc cagccgcgcc atccacgtgc 360
 accagttcgg ggacctgagc cagggtcgc agtccaccgg gccccactac aaccgctgg 420
 ccgtgccca cccgcagcac ccgggcgact tcggcaactt cgcggtccgc gacggcagcc 480
 tctggaggta ccgcgccggc ctggccgcct cgctcgcggg cccgcaactc atcgtgggcc 540
 gggccgtggt cgtccacgct ggcgaggacg acctgggccg cggcggaac caggccagcg 600
 tggagaacgg gaacgcgggc cggcggtcgt cctgctcgt ggtgggcgtg tgcgggcccg 660
 ggctctggga gcgcaggcg cgggagcact cagagcgcaa gaagcggcgg cgcgagagcg 720
 agtgcaaggc cgcctga 737

<210> 25
 <211> 695
 <212> DNA
 <213> Artificial Sequence

<220>

<223> nucleotide sequence encoding PEP1-deltaHD/EC SOD fusion protein

<400> 25
 tatgaaagaa acctggtggg aaacctggtg gaccgaatgg tctcagccga aaaaaaacg 60
 taaactgctg gacgggagcag gactcggcgg agcccaactc tgactcggcg gactggatcc 120
 gagacatgta cgccaaggct acggagatct ggcaggaggt catgcagcgg cgggacgacg 180
 acggcagcgt ccacgccgcc tgccaggtgc agccgtcggc cagcctggac gccgcgcagc 240
 cccgggtgac cggcgctcgt ctctccggc agcttgccgc ccgcgccaag ctgcagcct 300
 tcttcgcctt ggagggtctt ccgaccgagc cgaacagctc cagccgcgcc atccacgtgc 360
 accagttcgg ggacctgagc cagggtcgtc agtcaccagg gcccactac aaccgctgg 420
 ccgtgccga cccgcagcac ccgggcgact tcggcaactt cgcggtccgc gacggcagcc 480
 tctggaggta ccgcgccggc ctggccgcct cgtcgcggg cccgcaactc atcgtgggccc 540
 gggccgtggt cgtccacgct ggcgaggacg acctgggccc cggcggaac caggccagcg 600
 tggagaacgg gaacgcgggc cggcggctgg cctgctgcgt ggtgggctgt tgcgggcccg 660
 ggctctggga gcgccaggcg cgggagcact cagag 695

<210> 26
 <211> 19
 <212> DNA
 <213> Artificial Sequence

<220>

<223> primer

<400> 26
 ttgtctctaa tagagggtc 19

<210> 27
 <211> 19
 <212> DNA
 <213> Artificial Sequence

<220>

<223> primer

<400> 27

tcaagcctgt ctatcttct 19

<210> 28
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 28
atctacagct cctttgtct t 21

<210> 29
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 29
atctacagct cctttggctt 20

<210> 30
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 30
aaccctcaga gccacccta 20

<210> 31
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 31
gtgcatacaa agcaaactgc 20

<210> 32
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 32
catcttccag gagcgagacc 20

<210> 33
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 33
tccaccaccc tgttgctgta 20